

**REMARKS**

Claims 1-18 are pending in this application. Claims 2-5 and 8-18 are currently withdrawn. By this Amendment, claim 6 is amended.

No new matter is added. The amendment to claim 6 is supported in the original specification at, for example, Examples 4 and 5 identifying a support having a 30 nm pore size. The specification also mentions that the pore diameter may be 10 nm or more at several locations. As such, the specification clearly overall adequately describes a pore diameter of 10 nm to 30 nm.

In view of the foregoing amendments and the following remarks, reconsideration of the application is respectfully requested.

I. **Rejections Under 35 U.S.C. §102(b)**

A. **Connolly**

Claims 1, 6 and 7 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 5,902,363 (hereinafter Connolly). The rejection is respectfully traversed.

1. **Claims 1 and 7**

Claim 1 recites a support for an exhaust gas purification catalyst comprising a porous catalyst base material and a metal oxide support layer coated onto the inner surface of the pores of the porous catalyst base material, and in which the surface of the metal oxide support layer has mesh-like cracks. Claim 7 recites a support for an exhaust gas purification catalyst comprising a porous catalyst base material and a metal oxide support layer coated onto the inner surface of the pores of the porous catalyst base material, and in which the metal oxide support layer is porous with an average pore diameter of 10 nm or more and the surface of the metal oxide support layer has mesh-like cracks.

The Patent Office asserts that Connolly discloses the support material of claims 1 and 7 in that it allegedly discloses both the porous catalyst base material and oxide support matrix (see col. 20 and claim 1). The Patent Office thus appears to suggest that the material disclosed in Connolly would inherently exhibit mesh-like cracks in the metal oxide support layer. Applicant strongly disagrees. Unlike the support layer in claims 1 and 7, Connolly does not teach a metal oxide support layer having mesh-like cracks, nor does Connolly describe any methods of making the support layer that would achieve such mesh-like cracks in the support layer.

Claims 1 and 7 are directed to supports including a metal oxide having mesh-like cracks. As described in the present specification, such supports are made by impregnating a solution or slurry containing a metal salt. The solution or slurry is used as the raw material for synthesizing a metal oxide into the pores of a catalyst support for an exhaust gas purification catalyst. A reaction is carried out for forming metal oxide within the pores of the support. Thus, the metal oxide support layer formed can be coated extremely homogeneously on the surface inside the pores of a catalyst base material for an exhaust gas purification catalyst. By making the solid portion concentration of the solution or slurry containing the metal salt of 10-40 wt%, mesh-like cracks are made to occur in the surface of the metal oxide support layer formed on the pore inner surfaces. These cracks serve to make the distribution and diffusion of exhaust gas satisfactory within the exhaust gas purification catalyst support. As explained on page 12 of the present specification, mesh-like cracks are not formed if the procedure for making, and solids content of the solution or slurry, are not followed.

Connolly does not teach or suggest making the metal oxide in this way, and thus the oxide could not be expected to develop the mesh-like cracks as in the support of claims 1 and 7. Connolly describes an alumina slurry containing formic acid and glycerol, in which the solids content of the dispersion is 62-65 weight percent (see Example 1). Connolly does not

teach a solution or slurry having a metal salt with a solid portion of 10-40%. The method described in Connolly thus would not be expected to provide for a metal oxide layer with mesh-like cracks. Nothing in Connolly teaches a method for making a metal oxide layer with mesh-like cracks therein as recited in claims 1 and 7, and thus mesh-like cracks would not inherently be expected to be formed in a support layer made following the teachings of Connolly.

2. Claim 6

Claim 6 recites a support for an exhaust gas purification catalyst comprising a porous catalyst base material and a metal oxide support layer coated onto the inner surface of the pores of the porous catalyst base material, in which the metal oxide support layer is a porous layer having an average pore diameter of 10 to 30 nm.

The Patent Office asserts that Connolly discloses a membrane layer that defines pores having diameters of 0.1 to 50 microns (100 to 50,000 nm). However, Connolly fails to teach a metal oxide support layer having an average pore diameter of 10 to 30 nm.

3. Conclusion

For the foregoing reasons, Applicant submits that Connolly does not teach or suggest claims 1, 6 and 7. Reconsideration and withdrawal of this rejection are respectfully requested.

B. Hunter

Claims 1, 6 and 7 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 3,799,796 (hereinafter Hunter). The rejection is respectfully traversed.

1. Claims 1 and 7

The Patent Office asserts that there is no patentable distinction seen between the claimed support material and that disclosed by Hunter. Applicant disagrees. Hunter

describes the use of a support material comprising a porous coating of  $\text{Al}_2\text{O}_3/\text{SiO}_2$  fibers on a support such as an aluminum honeycomb (see the Abstract and col. 2, lines 38-51).

As described in section A above, claims 1 and 7 provide a support comprising a metal oxide support layer with mesh-like cracks coated onto the inner surface of the pores of a porous base material for an exhaust gas purification catalyst. Hunter does not describe a metal oxide with mesh-like cracks as recited in claims 1 and 7 of the present application. Nothing in Hunter teaches a method of making the porous fiber support layer in a manner that would achieve mesh-like cracks in the fibrous layer as recited in claims 1 and 7. It cannot be concluded that the fibrous support layer of Hunter inherently exhibits mesh-like cracks in the support layer as required in claims 1 and 7.

2. Claim 6

Claim 6 recites a support for an exhaust gas purification catalyst comprising a porous catalyst base material and a metal oxide support layer coated onto the inner surface of the pores of the porous catalyst base material, in which the metal oxide support layer is a porous layer having an average pore diameter of 10 to 30 nm.

The Patent Office alleges that Hunter anticipates claim 6 of the present application. However, nowhere does Hunter teach or suggest a metal oxide support layer having a pore diameter of 10 to 30 nm.

3. Conclusion

For the foregoing reasons, Applicants submit that Hunter does not teach or suggest claims 1, 6 and 7. Reconsideration and withdrawal of this rejection are respectfully requested.

C. EP 0 766 993 A2

Claims 1, 6 and 7 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by European Patent EP 0 766 993 A2 (hereinafter EP '993). The rejection is respectfully traversed.

1. Claims 1 and 7

As in section A, claims 1 and 7 are directed to supports including a metal oxide support layer having mesh-like cracks on the surface thereof. Such supports are made by impregnating the porous catalyst base material with a solution or slurry containing a metal salt. The metal oxide support layer formed can be made to exhibit mesh-like cracks in the surface by making the solid portion concentration of the solution or slurry containing a metal salt 10-40 wt%. These mesh-like cracks serve to make the distribution and diffusion of exhaust gas satisfactory within the exhaust gas purification catalyst support.

EP '993 fails to describe the support material of claims 1 and 7 in that it does not describe a metal oxide support layer having mesh-like cracks. Further, EP '993 does not teach the making of a metal oxide support layer in the manner necessary to achieve mesh-like cracks as recited in claims 1 and 7, and thus mesh-like cracks are not inherent to the support layer. Instead, EP '993 merely describes coating a catalyst support with a coating solution (see col. 6), but nowhere provides any details that would indicate formation of mesh-like cracks in the coating. Therefore, because it fails to disclose the claimed support material, claims 1 and 7 of the present application are not anticipated by EP '993.

2. Claim 6

Claim 6 recites a support for an exhaust gas purification catalyst comprising a porous catalyst base material and a metal oxide support layer coated onto the inner surface of the pores of the porous catalyst base material, in which the metal oxide support layer is a porous layer having an average pore diameter of 10 to 30 nm.

EP '993 fails to teach an average pore diameter of 10 to 30 nm. EP '993 discloses pore diameters of 25 to 40  $\mu\text{m}$  (see col. 5, lines 35-37). However, nowhere does EP '993 teach a metal oxide support layer having the pore diameter of claim 6.

3. Conclusion

For the foregoing reasons, Applicant submits that EP '993 does not teach or suggest claims 1, 6 and 7. Reconsideration and withdrawal of this rejection are respectfully requested.

D. EP 0 736 503 A1

Claims 1, 6 and 7 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by European Patent EP 0 736 503 A1 (hereinafter EP '503). The rejection is respectfully traversed.

1. Claims 1 and 7

The Patent Office asserts that there is no patentable distinction between the claimed support material and that disclosed in EP '503. Applicant disagrees.

As stated in above section A, claims 1 and 7 are directed to supports including a metal oxide having mesh-like cracks. Such supports are made by impregnating a solution or slurry containing a metal salt, wherein the solid portion concentration of the solution or slurry containing a metal salt is 10-40 wt%.

As with the other three references discussed above, EP '503 also fails to describe the support material of claims 1 and 7 in that it does not describe a metal oxide support layer having mesh-like cracks in a surface thereof. EP '503 does not teach or suggest a method like that used in the present application for achieving the mesh-like cracks in the support layer as recited in claims 1 and 7, and thus mesh-like cracks are not inherent to the support layer. Like EP '993 discussed above, EP '503 also provides no details as to how a coating might be formed so as to form mesh-like cracks in the surface thereof, and nothing in EP '503

otherwise indicates that mesh-like cracks are in fact formed in the coating. Therefore, because it fails to disclose the claimed support material, claims 1 and 7 of the present application are not anticipated by EP '503.

2. Claim 6

Claim 6 recites a support for an exhaust gas purification catalyst comprising a porous catalyst base material and a metal oxide support layer coated onto the inner surface of the pores of the porous catalyst base material, in which the metal oxide support layer is a porous layer having an average pore diameter of 10 to 30 nm.

The Patent Office asserts that EP '503 discloses the average pore size of the communicating pores is 10-60  $\mu\text{m}$ . However, nowhere does EP '503 teach a metal oxide support layer having an average pore diameter of 10 to 30 nm.

3. Conclusion

For the foregoing reasons, Applicant submits that EP '503 does not teach or suggest claims 1, 6 and 7. Reconsideration and withdrawal of this rejection are respectfully requested.

II. Rejoinder

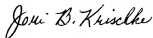
Applicant submits that upon allowance of claims 1, 6 and 7, claims 2-5 and 8-18 should be rejoined with the application and similarly allowed.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-18 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff  
Registration No. 27,075

Jori B. Krischke  
Registration No. 57,349

JAO:JBK/rav

Date: July 3, 2006

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
--